

What is claimed is:

- 1 1. A system comprising:
2 a flywheel stored within a canister; and
3 a heat pipe having an evaporator and a condenser, the heat pipe being mounted
4 with the evaporator inside the canister and the condenser outside the canister; and
5 means for dissipating heat from the condenser of the heat pipe.
- 1 2. A system comprising:
2 a first heat pipe having an evaporator and a condenser, the first heat pipe being
3 mounted with the evaporator inside the canister and the condenser outside the canister;
4 a second heat pipe having an evaporator thermally coupled to the condenser of the
5 first heat pipe, the second heat pipe having a condenser; and
6 means for dissipating heat from the condenser of the second heat pipe.
- 1 3. A system comprising:
2 a flywheel stored within a canister; and
3 a heat pipe having an evaporator and a condenser, the heat pipe being mounted
4 with the evaporator inside the canister and the condenser abutting a wall of the canister.
- 1 4. A system for cooling a canister, comprising:
2 a first heat pipe having an evaporator and a condenser, the first heat pipe being
3 mounted with the evaporator inside the canister and the condenser outside the canister;
4 a second heat pipe having an evaporator thermally coupled to the condenser of the
5 first heat pipe, the second heat pipe having a condenser;
6 a third heat pipe having an evaporator thermally coupled to the condenser of the
7 second heat pipe, the third heat pipe having a condenser; and
8 means for dissipating heat from the condenser of the third heat pipe.
- 1 5. The system of claim 4, wherein the canister is at least partially buried below
2 ground, and the first heat pipe is positioned entirely below a ground surface.

1 6. The system of claim 4, wherein the second heat pipe is partially buried below the
2 ground surface, and partly above the ground surface.

1 7. The system of claim 4, wherein the third heat pipe is completely above the ground
2 surface.

1 8. The system of claim 4, wherein the second heat pipe is a thermosyphon.

1 9. The system of claim 4, wherein the evaporator of the third heat pipe is oriented
2 substantially vertically, and the condenser of the third heat pipe is at a substantial angle
3 away from vertical.

1 10. The system of claim 9, wherein the angle of the condenser of the third heat pipe is
2 at least about 5 degrees from horizontal.

1 11. The system of claim 4, wherein the first heat pipe is mounted to a motor housing
2 of a flywheel system within the canister.

1 12. The system of claim 11, wherein the first heat pipe is mounted within a block of
2 metal having a hole therethrough to receive the heat pipe, the block being mounted to the
3 flywheel system.

1 13. The system of claim 4, wherein the canister is a vacuum housing.

1 14. The system of claim 4, wherein the heat dissipating means including a plurality of
2 circular fins arranged in a fin stack.

1 15. The system of claim 4, wherein at least one of the heat pipes has a wick in the
2 evaporator thereof that does not extend into the condenser thereof.

1 16. The system of claim 4, wherein at least one of the heat pipes has a wick formed of
2 sintered metal.

1 17. An energy storage system, comprising:
2 a canister;
3 an energy storage flywheel having a motor housing mounted inside the canister;
4 a first heat pipe having an evaporator and a condenser, the evaporator of the first
5 heat pipe being mounted to the motor housing, the condenser of the first heat pipe outside
6 the canister;
7 a second heat pipe having an evaporator conductively coupled to the condenser of
8 the first heat pipe, the second heat pipe having a condenser;
9 a third heat pipe having an evaporator conductively coupled to the condenser of
10 the second heat pipe, the third heat pipe having a condenser interfacing to a heat
11 dissipating means.

1 18. The system of claim 17, wherein the second heat pipe is a thermosyphon.

1 19. The system of claim 17, wherein the evaporator of the third heat pipe is oriented
2 substantially vertically, and the condenser of the third heat pipe is at a substantial angle
3 away from vertical.

1 20. The system of claim 19, wherein the angle of the condenser of the third heat pipe
2 is at least about 5 degrees from horizontal.

1 21. The system of claim 17, wherein the canister is a vacuum housing.

1 22. The system of claim 17, wherein the heat dissipating means include circular fins
2 arranged in a fin stack.

1 23. The system of claim 17, wherein at least one of the heat pipes has a wick in the
2 evaporator thereof that does not extend into the condenser thereof.

1 24. The system of claim 17, wherein at least one of the heat pipes has a wick formed
2 of sintered metal.